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DOI: https://doi.org/10.5964/ijpr.v14i2.4069

Originally published at:
Shujja, Sultan; Adil, Adnan; Randall, Ashley K; Bodenmann, Guy; Malik, Farah (2020). Psychometric properties and validity of dyadic coping inventory-urdu version for use in Pakistan. Interpersona, 14(2):183-199.
DOI: https://doi.org/10.5964/ijpr.v14i2.4069

Interpersona | An International Journal on Personal Relationships
interpersona.psychopen.eu | 1981-6472

Articles

Psychometric Properties and Validity of Dyadic Coping Inventory-Urdu Version for Use in Pakistan

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Abstract

For married individuals living in Pakistan, stress within their relationship has emerged as a major source of marital conflicts and even relationship dissolution. However, research based on the systemic transactional model of dyadic coping (DC) suggests partners' use of coping strategies may help in buffering these devastating effects of stress. The original German version of the Dyadic Coping Inventory (DCI) is a widely used self-report measure that has been translated in various languages, however, has not been validated for use with individuals living in Pakistan who speak Urdu. The purpose of the present study was to translate and validate the DCI into Urdu for use with married individuals living in Pakistan. Data were collected from 538 Pakistani married adults. Findings supported the original factor structure of the German and English version of the DCI. As such, results supported the 33-items DCI-Urdu as a valid and reliable measure to assess DC behaviors in Pakistani married individuals. Further, convergent and discriminant validity and measurement invariance (MI) across gender for the DCI-Urdu were consistent with that of DCI-English. A validated measure of the DCI in Urdu provides new directions for researchers and clinicians working with couples in Pakistan.

Keywords: dyadic coping inventory, dyadic coping, stress, marital relationship, Pakistan

Interpersona, 2020, Vol. 14(2), 183–199, https://doi.org/10.5964/ijpr.v14i2.4069

Received: 2020-07-18. Accepted: 2020-11-04. Published (VoR): 2020-12-22.

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The experience of stress is, unfortunately, a world-wide phenomenon (Falconier et al., 2016; Hilpert et al., 2016; Mujtaba, Lara, King, Johnson, & Mahanna, 2010). In Pakistan, approximately 50 million adults are suffering from various mental illnesses including anxiety disorders and depression as a result of stress (Ali & Gul, 2018; Gallup Pakistan, 2019; Sarfraz, 2017; World Health Organization, 2016). Since 1990, researchers interested in romantic relationships have started investigating the systemic effects of stress; in particular how individual stress may influence partners' behavior, also known as dyadic stress (Falconier et al., 2016; Randall & Bodenmann, 2009).

Research on dyadic stress and coping have spanned over three decades and several models such as Coyne and Smith's (1991) relationship focused coping model, DeLongis and O'Brien's (1990) empathic coping model, Revenson's (1994) congruence coping model, and Bodenmann's (1997) systemic-transactional model, have been developed. While all of the models examining dyadic stress focus on the ways in which romantic couples

face and cope with stress, the systemic transactional model focuses explicitly on partners' stress communication and dyadic coping behaviors, which can be measured with the self-report Dyadic Coping Inventory (DCI; Bodenmann, 2008).

Systemic Transactional Model

A key premise related to the systemic transactional model (STM; Bodenmann, 1995, 2005, 2007) is that the experience of one family member's stress affects the other family members (i.e., it is systemic). Specifically, one partner's experience of stress affects their partner by *stress spillover* and/or *stress crossover*. Stress spillover refers to the transmission of stress from one domain of life to another (e.g., external stress originating outside the relationship becomes internal stress or stress within the relationship), whereas stress crossover refers to the dyadic process in which one individuals' feelings of stress crosses over to the partner, causing the partner to feel stressed (Bakker et al., 2009). As an example, if a married woman in Pakistan is unable to conceive a child within the first two or three years of marriage, her in-laws may blame her as infertile. This may cause undue stress on the woman, which ultimately affects their partner as well (Qadir et al., 2011).

Coping With Stress

According to the STM (Bodenmann, 2005), dyadic coping (DC) is defined as the process by which partners help each other when one or both are experiencing stress. The process of DC starts when one partner communicates a stressful experience to the other partner either verbally (e.g., discussing issues related to in-laws aiming at jointly searching for a solution) or nonverbally (e.g., shutting down and avoiding conversation). The non-stressed partner interprets theses stress signals and can either choose to respond positively or negatively to their partner. Positive DC includes problem-focused DC (e.g., giving advice to the partner to bring the grievances to the in-laws), emotion-focused DC (e.g., providing emotional support), or delegated DC (e.g., taking responsibility of childcare while the partner relaxes). Partners can also engage in negative DC by providing ambivalent support (Bodenmann, 1997; 2005). For example, men hold their partners responsible for conflict with in-laws in Pakistan. Furthermore, common or joint DC is displayed when stressors affect both partners simultaneously, such as child rearing responsibilities and issues in Pakistan (Arshad & Iqbal, 2016). A common way for researchers and clinicians working with couples to assess dyadic coping behaviors is to administer the self-report DCI (Bodenmann, 2008).

Measuring DC

The DCI (Bodenmann, 2008) is a self-report instrument designed to assess partners' stress communication and dyadic coping behaviors. Originally developed in German, the DCI has been translated and validated in different languages. So far, validation studies were published in Chinese (Xu, Hilpert, Randall, Li, & Bodenmann, 2016), English (Randall, Hilpert, Jimenez-Arista, Walsh, & Bodenmann, 2016), French (Ledermann, Bodenmann, Rudaz, & Bradbury, 2010), Italian (Ledermann et al., 2010), Japanese (Yokotani & Kurosawa, 2015), Persian (Fallahchai, Fallahi, Chahartangi, & Bodenmann, 2019), Polish (Wendołowska, Czyżowska, & Bodenmann, 2020), Portuguese (Vedes, Nussbeck, Bodenmann, Lind, & Ferreira, 2013), Romanian (Rusu, Hilpert, Turliuc, & Bodenmann, 2016), and Spanish (Falconier et al., 2013). All the validation studies of DCI mentioned above support the factor structure originally reported in validation study of DCI-German (Bodenmann, 2008), with a few caveats for culturally sensitive items.

Role of Stress and Coping in Pakistan

Pakistan provides a unique canvas for studying dyadic stress and coping processes due to its unique cultural characteristics associated with marital relationships. In particular, Pakistan endorses arranged marriages (Khalil, Naeem, Yousafzai, & Gul, 2014; Zafar & Kausar, 2014), endogamous marriages (married couple must be from the same caste; Saleem, Chaudhry, & Riaz, 2015), and exchange marriages, where a daughter from one family gets married with the son another family (usually blood relatives) and the other family's daughter gets married with the son from the first family in return (Zaman, 2011a). Because of these practices, partners may experience unfamiliarity with their partners' attitude, behaviors, and habits, which may result in varied level of stress (Arif & Fatima, 2015; Arshad & Iqbal, 2016; Fatima & Ajmal, 2012; Mir, Wani, & Sankar, 2016; Niaz, 2004; Zaman & Ali, 2014). Despite the growing research evidence related to dyadic stress and coping for couples across the world (for a review see Falconier et al., 2016), principles associated with stress communication and dyadic coping are still understudied in Pakistan due to a lack of availability of a standardized self-report measure of dyadic coping. As such, the goal of the present study is to fill this important gap in the literature.

The Present Study

Partners' dyadic coping is found to be positively associated with lower stress and higher well-being (Falconier et al., 2015); however, understanding how dyadic coping may work for married individuals in Pakistan has been largely ignored due to the unavailability of a standardized measure. According to Pakistan Economic Survey (UNESCO, 2018), most of the Pakistani adults (99.7%) speak and understand Urdu and perceive themselves at ease in reading and understanding the contents presented in this language. Thus, the aim of the present study was to develop and validate the DCI-Urdu for use in Pakistan. In addition to the development that included translation and back translation procedures (Acquadro, Conway, Giroudet, & Mear, 2012), we also examined convergent and discriminant validity. Lastly, measurement invariance (MI) was conducted to examine the equivalence across gender on five-factor structure of DCI as reported by previous validation studies of DC (e.g., Randall et al., 2016).

Method

Recruitment and Participants

Participants were recruited from three cities (Bhakkar, Lahore, Sargodha) in Pakistan using a snowball sampling technique. Participants currently living in Pakistan and in their first marriage for at least 2 years were eligible to participate. A total of 560 married adults (n = 278 men and n = 282 women) were recruited for the study. During initial screening, twelve women withdrew because they did not have their in-laws permission to participate. Seven men were excluded because they did not meet aforementioned criterion (i.e., they were in their second marriage), and three men refused to proceed without giving any reason.

The final sample comprised of 538 adults (n = 268 men and n = 270 women), ranging in age from 22-72 years (M = 37.19, SD = 10.3 years) for men and 18-69 years (M = 32.15, SD = 8.56 years) for women. Approximately 21.6% men and 23.8% women completed high school education, 74.2% men completed formal collage/university education compared to 68.9% women and 4.1% men attained MPhil/PhD degree compared to 3% women. Majority of the respondents (68.3% men and 58.1% women) belonged to middle class socioeco-

nomic status with family income per month (*M* = 92, 340 Pakistan rupees [PKR], *SD* = 23, 981 PKR). Men's average reported relationship length was 10.35 years, *SD* = 8.78, range 2–39 years; women reported an average relationship length was 9.98 years, *SD* = 8.78, range 2–44 years.

Measures

Dyadic Coping Inventory (DCI)

The DCI is a 37-item self-report measure designed to assess stress communication and partners' dyadic coping behaviors (Bodenmann, 2008). Participants report on perceptions of their own (self) and their partner's (partner) DC behaviors. The DCI also assesses common DC behavior when both partners are stressed (common DC). The respondents rate each item on a 5-point Likert type response format that ranges from *very rare* (1) to *very often* (5). The details of the DCI subscales are presented in Table 1.

Table 1

Description of DCI Subscales

Variable	Item	Sample item
Self		
Stress Communication	4	I show my partner through my behavior when I am not doing well or when I have problems
Emotion Focused Supportive DC	3	I show empathy and understanding to my partner
Problem Focused Supportive DC	2	I try to analyze the situation together with my partner in an objective manner and help him/her to understand and change the problem
Delegated DC	2	I take on things that my partner would normally do in order to help him/her out
Negative DC	4	I blame my partner for not coping well enough with stress
Partner		
Stress Communication	4	My partner shows me through his/her behavior that he/she is not doing well or when he/she has problems
Emotion Focused Supportive DC	3	My partner shows empathy and understanding to me
Problem Focused Supportive DC	2	My partner helps me analyze the situation so that I can better face the problem
Delegated DC	2	My partner takes on things that I normally do in order to help me out
Negative DC	4	My partner provides support, but does so unwillingly and unmotivated
Emotion Focused Common DC	2	We are affectionate to each other, make love and try that way to cope with stress
Problem Focused Common DC	3	We try to cope with the problem together and search for ascertained solutions
Evaluation of DC	2	I am satisfied with the support I receive from my partner and the way we deal with stress together

Note. DC = dyadic coping.

Reliability estimates for the total DC (α_{men} = .81 and α_{women} = .90) and subscales were within acceptable ranges (α_{women} = .60 - .72, α_{men} = .60 - .82), with the exception of stress communication by self (α_{women} = .41), problem-focused supportive DC by self (α_{men} = .50 and α_{women} = .43), delegated DC by self (α_{women} = .53). Reasonably high alpha coefficients were estimated for the composite DC by self (α_{men} = .77 and α_{women} = .72) and DC by partner (α_{men} = .77 and α_{women} = .73; see Table 2).

Translation of the DCI Into Urdu

To translate the English version of the DCI (Randall et al., 2016) into Urdu, two experts were recruited who met the criteria for translation recommended by MAPI Research Trust (Acquadro et al., 2012). The translators had at least five years of experience in scale translation, held a PhD in Psychology, and were fluent in both Urdu

and English. Using the procedures outlined by MAPI guidelines (Acquadro et al., 2012), the two translators first translated the DCI from English into Urdu. Following this, three experts examined the initial translation of the DCI items from English to Urdu. Next, three experts in Pakistan who held a PhD in Psychology and over 15 years of translation experience, examined linguistic expression, cultural connotations, and grammatical structure of Urdu statements. On the recommendations of these subject experts, a best-consolidated translation draft was prepared. In order to substantiate the semantic equivalence between DCI-Urdu and English version of the DCI (Randall et a., 2016), DCI-Urdu was translated into English.

Following the back-translation procedure, two bilingual experts who had MPhil English degree and five years of teaching experience in Department of English at the University of Sargodha, back-translated the DCI-Urdu version to English. In order to assess the compatibility of the two back translations of the DCI- Urdu with DCI (English; Randall et al., 2016), two subject experts who held a PhD in English Language & Literature and 15 years teaching experience in Department of English at the University of Sargodha, examined the back translations. Based on their review, the finalized draft of the DCI was ready for empirical evaluation.

Cultural Adaptation of the DCI-Urdu

Prior to validating the DCI-Urdu, the translated items were reviewed by experts in Pakistan to determine their appropriateness. They made qualitative judgment about the cultural appropriateness of the DCI in order to ensure ecological validity. Upon review, all the items of the DCI appeared to be culturally unbiased except item 34 “We help each other relax with such things like massage, taking a bath together, or listening to music together” that was found to have culturally inappropriate connotations. Given the religious, social, and cultural norms that restrict sharing of private matters openly (Ali et al., 2011), Pakistani adults are unlikely to openly discuss or even talk about activities like massage or taking a bath together. With the consent of original author of the DCI (Bodenmann, 2008) and relationship researchers in Pakistan, we revised item 34 to read “We help each other relax by doing such activities (e.g., shopping, listening to music, or visiting the hill station)”

Relationship Assessment Scale (RAS)

RAS was developed by Hendrick et al. (1998). The current study used the Urdu version of the RAS (Shahid, 2014) that is a 7-item one-dimensional self-report measure designed to assess the extent to which an individual is satisfied with their relationship. For the purpose of this study, the RAS was administered as a measure of convergent validity. Participants are asked to rate each item on a 5-point Likert type response format indicating *low level of satisfaction* (1) to *high level of satisfaction* (5) with relationship with partner. The sample items of RAS are *“*How well does your partner meet your needs?*”* and *“*How much do you love your partner?*”*. In the current study, reliability estimates for the RAS was found to be acceptable for the men (α = .91) and women (α = .86).

The Brief COPE

The Brief COPE was developed by Carver (1997). The current study used its Urdu version (Akhtar, 2005) that is a 28-item self-report measure designed to assess individual coping behaviors. For the purpose of this study, the Brief COPE was administered as a measure of discriminant validity. It contained 28 items and 14 factors i.e., self-distraction, active coping, denial, substance use, use of emotional support, use of instrumental support, behavioral disengagement, venting, positive reframing, planning, humor, acceptance, religion and self-blame). Respondents rated each item on a 4-point Likert type response format ranging from *I have not been doing it at all* (1) to *I have been doing this a lot* (4). For the purpose of our study, two items from *use*

of emotional support subscale “I've been getting emotional support from others” and “I've been getting comfort and understanding from someone” and two from the *humor* subscale “I've been making jokes about it” and “I've been making fun of the situation” were used because these scales showed highest alpha reliabilities amongst the subscales of the Brief COPE (Urdu) for the Pakistani population. The alpha reliabilities for the Brief COPE subscales were found to be acceptable for men ($\alpha_{\text{use of emotional support}}$ = .68; α_{humor} = .81) and women ($\alpha_{\text{use of emotional support}}$ = .70; α_{humor} = .79).

Results

Reliabilities, means, standard deviations, and independent sample *t*-test were computed to examine mean score difference between men and women. In order to assess the issue of acquiescence i.e., a tendency to agree rather than disagree with the proposition in general (Lentz, 1938) as a potential source of response bias, percentage of extreme response options (*never*/*rarely often* vs *very often*) were computed. Results demonstrated that respondents rated the items on *never*/*very rarely* (19.78%) compared to the *very often* (28.22%), which suggests minimal differences between the two propositions ruling out the possibility of the acquiescence.

Findings of independent sample *t*-test reported in Table 2 showed that , women reported significantly higher stress communication compared to men, $t(536) = 2.80$, $p < .05$. Additionally, women reported higher delegated DC by self, $t(536) = 2.45$, $p < .05$, whereas men reported higher delegated DC by partners, $t(536) = 2.81$, $p < .05$. Overall, women reported a higher use of overall DC by self, $t(536) = 2.69$, $p < .05$, compared to men.

Table 2

Gender-Wise Mean Differences on Total DCI and Its Subscales Along With Alpha Coefficients

Source	*M* (*SD*) Men	*M* (*SD*) Women	*t*(536)	α_{men}	α_{women}
Stress Communication (Self)	3.48 (0.71)	3.64 (0.65)	2.80*	.60	.41
Emotion Focused Supportive DC (Self)	3.86 (0.82)	3.97 (0.80)	1.45	.71	.67
Problem Focused Supportive DC (Self)	3.61 (0.78)	3.63 (0.79)	0.45	.50	.43
Delegated DC (Self)	3.28 (0.93)	3.47 (0.87)	2.45*	.63	.53
Negative DC (Self)	3.27 (1.04)	3.42 (1.32)	1.30	.86	.86
Stress Communication (Partner)	3.57 (0.69)	3.42 (0.72)	2.48*	.64	.60
Emotion Focused Supportive DC (Partner)	3.84 (0.86)	3.76 (0.85)	1.13	.70	.60
Problem Focused Supportive DC (Partner)	3.65 (0.89)	3.61 (0.91)	0.58	.60	.62
Delegated DC (Partner)	3.38 (0.99)	3.14 (1.01)	2.81*	.60	.63
Negative DC (Partner)	3.11 (1.19)	3.25 (1.17)	1.38	.80	.79
Emotion Focused Common DC	3.61 (1.02)	3.65 (1.03)	0.38	.70	.60
Problem Focused Common DC	3.73 (0.86)	3.77 (0.86)	0.55	.80	.77
Evaluation of DC	4.01 (0.98)	4.06 (0.97)	0.083	.82	.77
Total DC Self	3.49 (0.59)	3.62 (0.55)	2.69*	.77	.72
Total DC Partner	3.49 (0.58)	3.43 (0.58)	1.15	.77	.73
Total DC	3.41 (0.53)	3.42 (0.50)	0.81	.90	.83

Note. DC = dyadic coping.

*$p < .05$.

The inter-correlations among the DCI-Urdu and its subscales for men and women are represented in Table 3. Findings revealed that correlation coefficients between overall DC with DC by self (r_{men} = .92, $p < .001$; r_{women}

= .87, $p < .001$) and DC by partner (r_{men} = .92, $p < .001$; r_{women} = .91, $p < .001$) shared common variance across gender. The correlation coefficients for all the subscales of DCI-Urdu were found to be significant at .01 and .001 alpha level except negative DC by self and partner with stress communication by self, emotion-focused supportive DC by self, problem-focused supportive DC by self, and delegated DC by self for women.

Table 3

Gender-Wise Intercorrelations Among DCI and Its Sub-Scales

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. SC (S)	-	.50**	.41**	.32**	.07	.42**	.48**	.40**	.33**	.12*	.43**	.44**	.42**	.64**	.50**	.62**
2. EFSDC (S)	.41**	-	.59**	.33**	.16*	.56**	.56**	.53**	.33**	.12*	.51**	.62**	.59**	.70**	.58**	.71**
3. PFSDC (S)	.28**	.54**	-	.36**	.06	.43**	.45**	.38**	.26**	.04	.44**	.53**	.46**	.59**	.43**	.57**
4. DDC (S)	.26**	.33**	.39**	-	.03	.28**	.31**	.24**	.30**	-.02	.30**	.29**	.23**	.49**	.28**	.42**
5. NDC (S)	.03	.08	-.04	.03	-	.09	.09	.06	-.01	.79**	06	.13*	.19**	.66**	.49**	.66**
6. SC (P)	.41**	.42**	.39**	.33**	-.04	-	.54**	.46**	.39**	.03	.45**	.48**	.44**	.47**	.67**	.63**
7. EFSDC (P)	.39**	.39**	.30**	.17*	.07	.44**	-	.57**	.41**	.06	.49**	.54**	.56**	.51**	71**	68**
8. PFSDC (P)	.35**	.39**	.39**	.18*	.05	.34**	.50**	-	.51**	.01	.44**	.54**	.56**	.43**	64**	60**
9. DDC (P)	.34**	.15*	.11	.12*	-.06	.30**	.27**	.40**	-	.005	.34**	.30**	.33**	.30**	.58**	.48**
10. NDC (P)	.04	.09	.01	.01	.81**	.04	.13*	.13*	.01	-	.04	.09	.19*	.54**	.57**	.53**
11. EFCDC	.38**	.47**	.30**	.34**	.05	.45**	.43**	.39**	.31**	.07	-	.61**	.61**	.46**	.47**	.61**
12. PFCDC	.31**	.53**	.44**	.28**	.06	.48**	.49**	.48**	.23**	.11	.55**	-	.61**	.55**	.54**	.69**
13. EDC	.32**	.53**	.37**	.33**	.04	.41**	.52**	.42**	.23**	.12*	.42**	.56**	-	.54**	.60**	.66**
14. DC (S)	.57**	.65**	.49**	.49**	.67**	.37**	.38**	.37**	.16*	.56**	.42**	.43**	.42**	-	.75**	.92**
15. DC (P)	.43**	.42**	.33**	.24**	.44**	.62**	.68**	.63**	.50**	.62**	.47**	.52**	.50**	.65**	-	.92**
16. Overall DC	.55**	.60**	.47**	.41**	.54**	.58**	.61**	.59**	.39**	.59**	.61**	.64**	.55**	.87**	.91**	-

Note. Correlation coefficients above the diagonal (above the – symbol) pertain to men and correlation coefficients below the diagonal (below the – symbol) pertain to women. SC = stress communication; EFSDC = emotion focused supportive dyadic coping; PFSDC = problem focused supportive dyadic coping; DDC = delegated dyadic coping; NDC = negative dyadic coping; EDC = evaluation dyadic coping; DC = dyadic coping; S = self, P = partner.

*$p < .01$. **$p < .001$.

Confirmatory Factor Analysis (CFA)

The factor structure of DC by self (5 factors), DC by partner (5 factors), and common DC (2 factors) were tested across gender with a CFA using Amos 23 software (Arbuckle, 2014). The model's fit to the data was evaluated through the common SEM indices including the comparative fit index (CFI > .95), the root mean square error of approximation (RMSEA < .06), the standardized root mean square residual (SRMR < .08), non-significant chi-square value (χ^2), or $\chi^2/df \leq 2.0$ test of exact fit (Hu & Bentler, 1998; Kline, 2013b; Schermelleh-Engel, Moosbrugger, & Müller, 2003). The fit indices have been reported in Table 4.

Table 4

CFA Showing Goodness of Fit Indices for DC by Self, DC by Partner and Common DC

Model/Factors and item	χ^2/df	GFI	CFI	SRMR	RMSEA	90% CI
Dyadic coping by self and partner						
Model I						
Self (5 factors, 15 items)	1.49	.94	.96	.04	.03	[.02, .03]
Partner (5 factors, 15 items)	1.83	.93	.92	.04	.03	[.03, .04]
Model II						
Self (5 factors, 13 items)	1.36	.96	.98	.03	.02	[.01, .03]
Partner (5 factors, 13 items)	1.46	.96	.97	.04	.03	[.01, .03]
Common dyadic coping						
Model III						
(2 factors, 5 items)	1.33	.99	.99	.01	.02	[.00, .06]

Note. GFI = goodness of fit index; CFI = comparative fit index; SRMR = standardized root mean square residual; RMSEA = root mean square error of approximation.

Model 1

In the Model 1, we examined the factor structure of the DCI used in prior validation studies (e.g., Falconier et al., 2013; Randall et al., 2016; Vedes et al., 2013). As shown in Table 3, the factor structure of DCI-English comprised five factors for DC by self (15 items), same five factor for DC by partner (15 items) and two factors of common DC (5 items; Randall et al., 2016). Upon examining the factor loadings on the items of DC by self i.e., Item 2 "I ask my partner to do things for me when I have too much to do" (λ_{men} = .25, λ_{women} = .22), Item 3 "I show my partner through my behavior when I am not doing well or when I have problems" (λ_{men} = .30, λ_{women} = .41), and DC by partner Item 17 "My partner asks me to do things for him/her when he has too much to do" (λ_{men} = .32, λ_{women} =.22) and Item 18 "My partner shows me through his/her behavior that he/she is not doing well or when he/she has problems" (λ_{men} = .20, λ_{women} = .20) were found to have lowest factor loadings.

Model 2

In Model 2, model fit indices were re-examined for five factor DC by self (13 items) and five factor DC by partner (13 items). Upon examination, Item 2 "I ask my partner to do things for me when I have too much to do" (λ_{men} = .25, λ_{women} = .22) and Item 3 "I show my partner through my behavior when I am not doing well or when I have problems" (λ_{men} = .30, λ_{women} = .41), which reflect stress communication by self, and Item 17 "My partner asks me to do things for him/her when he has too much to do" (λ_{men} = .32, λ_{women} = .22) and Item 18 "My partner shows me through his/her behavior that he/she is not doing well or when he/she has problems" (λ_{men} = .20, λ_{women} = .20), which reflect stress communication by partner, were found to have the lowest factor loadings. As such, these items were removed.

After removing these items (Item 2, 3, 17, and 18), model fit indices for DC by self were within acceptable range compared to the Model 1 ($GFI_{model\ 1/model\ 2}$ = .94/.96, $CFI_{model\ 1/model\ 2}$ = .96/.98, $SRMR_{model\ 1/model\ 2}$ = .04/.03, $RMSEA_{model\ 1/model\ 2}$ = .03/.02). Similarly, model fit indices for DC by partner indicated acceptable model fit as ($GFI_{model\ 1/model\ 2}$ = .93/.96, $CFI_{model\ 1/model\ 2}$ = .92/.97, $SRMR_{model\ 1/model\ 2}$ = .04/.04, $RMSEA_{model\ 1/model\ 2}$ = .03/.03).

Model 3

In order to assess factor structure of common DC scale, a separate CFA was carried out. In Model 3, five items (31, 32, 33, 34, 35) of common DC were separately tested across the gender. Based on the recommendation of the English version of DCI (Randall et al. 2016), we excluded two items of the evaluation scale i.e., "I am satisfied with the support I receive from my partner and the way we deal with stress together" and "I am satisfied with the support I receive from my partner and I find as a couple, the way we deal with stress together is effective". The model fit indices were found within acceptable range χ^2/df (1.33), GFI (.99), CFI (.99), SRMR (.01), and RMSEA (.02) demonstrating that data support the factor structure of common DC scale as proposed by previous validation studies of DCI.

Overall, the factor structure of DCI-Urdu was consistent with that of English version of the DCI (Randall et al., 2016) as shown in Figure 1, except item 9 of emotion-focused supportive DC by partner "My partner listens to me and gives me the opportunity to communicate what really bothers me" and item 24 of emotion-focused supportive DC by self "I listen to my partner and give him/her space and time to communicate what really bothers him/her", retained by the DCI-Urdu but English version of DCI did not.

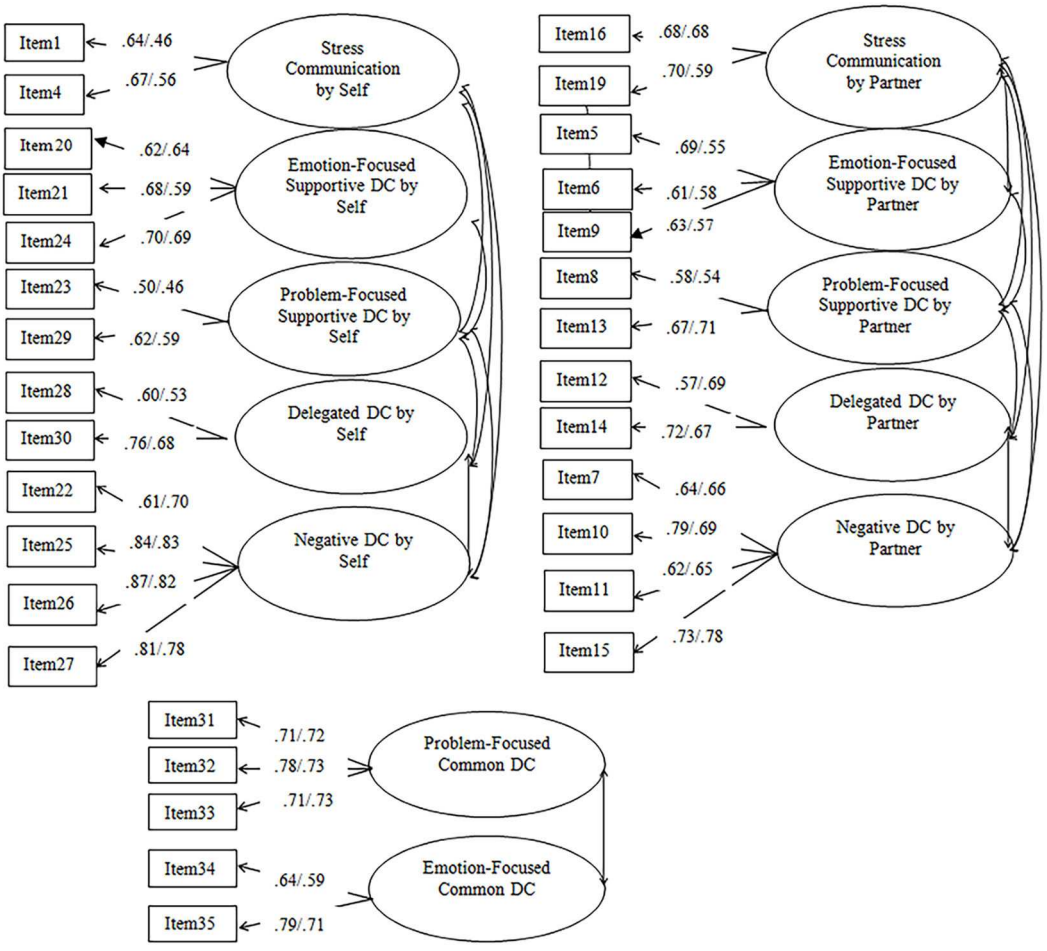

Figure 1. Confirmatory factor analysis of the DCI-Urdu.

Note. Factor loadings on items of five self-related, five partner-related, and two common factors of DCI (Urdu) are significant at $p < .001$. Factor loadings in the numerator pertain to men whereas those in the denominator pertain to women. DC = dyadic coping.

Construct Validity

Table 5 provides strong evidence for convergent validity of the DCI-Urdu as overall DC and its subscales were found to be more correlated with relationship satisfaction than use of emotional support and humor. Results revealed that overall DC and its subscales were significantly correlated with relationship satisfaction (-.34 < *r* > .73) whereas total DC and its subscales were less correlated with use of emotional support (-.09 < *r* > .17) and humor (-.05 < *r* > .13) indicated discriminant validity of the DCI-Urdu.

Table 5

Correlation Coefficients Indicating Discriminant and Convergent Validity of the DCI

	RAS	The Brief COPE	
Variable	**Relationship satisfaction**	**Use of emotional support**	**Humor**
Self			
Stress Communication	.51**	.09	-.19
Emotion Focused Supportive DC	.68**	.12	-.05
Problem Focused Supportive DC	.36*	.24	-.08
Delegated DC	.45*	.17	-.04
Negative DC	-.34*	-.05	-.19
Partner			
Stress Communication	.65**	.10	-.03
Emotion Focused Supportive DC	.30*	-.02	-.24
Problem Focused Supportive DC	.45*	.09	-.19
Delegated DC	.30*	-.17	-.24
Negative DC	-.37*	.01	-.08
Emotion Focused Common DC	.72**	.11	-.07
Problem Focused Common DC	.52**	-.04	.13
Evaluation DC	.62**	-.01	.05
Total DC	.73**	.09	-.14

Note. DC = dyadic coping; RAS = Relationship Assessment Scale.
*p < .01. **p < .001.

Measurement Invariance Across Gender

To assess variance on factor structure of DCI-Urdu between men and women, configural invariance, metric invariance, and scalar invariance were examined (see Table 6). The configural invariance test established a baseline model and confirmed the similarity of the conceptual framework across the two genders (Chen, 2007). The metric invariance of a scale established the evidence that the two groups had similar responses on the indicators of the scale (Chen, 2007). Scalar invariance was the most stringent invariance test and indicated that the measurement model had the same scale across both the genders (Chen, 2007). A scalarly invariant scale suggested that individuals having the same score on the latent construct would obtain the same score on the observed variable regardless of their gender.

Table 6

Invariance Tests for DCI Across Gender

Invariance level	χ^2	*df*	CFI	RMSEA	Model comparison	$\Delta\chi^2$	Δ*df*	ΔCFI	ΔRMSEA
5-Factor structure DC by self									
1. Configural Invariance	241.90	162	.96	.03					
2. Metric invariance	249.47	172	.96	.02	2 vs. 1	7.57	10	.001	.001
3. Scalar invariance	274.24	187	.95	.03	3 vs. 1	32.3	25	.004	.000
5-Factor structure DC by partner									
1. Configural invariance	234.20	152	.95	.03					
2. Metric invariance	240.88	162	.95	.03	2 vs. 1	6.68	10	.002	.002
3. Scalar invariance	259.97	177	.95	.03	3 vs. 1	25.7	25	.002	.002
2-Factor structure common DC									
1. Configural invariance	10.66	8	.99	.01					
2. Metric invariance	11.55	11	.99	.01	2 vs. 1	0.89	3	.002	.003
3. Scalar invariance	13.40	16	1.00	.00	3 vs. 1	2.74	8	.003	.013

Note. RMSEA = root mean square error of approximation; DC = dyadic coping; CFI = goodness of fit index.

For the configural invariance test of the DCI-Urdu, we kept the factor structure of the scale the same across both genders by having the same factor with the same indicators for both genders and freely estimated factor loadings, residuals, and intercepts across the two groups. Results revealed that for all three models (i.e., DC by self, DC by partner, and common DC) the data fit both genders well, which supported the DCI was configural invariant across genders. We constrained the factor loading of the indicators of the DCI-Urdu to be equal across gender for assessing the metric invariance. Findings indicated that the data again fit the model well, which suggests the DCI-Urdu showed metric invariance. Moreover, the comparison of metrically and configuraly invariant models revealed non-significant chi square difference tests and no differences in other measures of fit indices. Finally, for the assessment of the scalar invariance, we constrained the intercepts and the factor loadings to be equal across gender. This scalar invariant model also demonstrated excellent fit to the data. Moreover, the comparison of scalarly invariant models with the configuraly invariant models suggested non-significant chi square difference tests with no differences in CFI and RMSEA values. This demonstrated full scalar invariance of DCI-Urdu across both genders and revealed that both scalarly the configuraly invariant models fit the data equally well. All changes in the CFI and RMSEA for the scalar invariant models were below the critical value of chi square, indicating full scalar invariance across gender for all the three models (Chen, 2007).

Discussion

The goal of the present study was to assess the psychometric properties of the DCI-Urdu. Consistent with other validation studies of the DCI (Fallahchai et al., 2019; Ledermann et al., 2010; Randall et al., 2016; Rusu et al., 2016; Vedes et al., 2013; Wendołowska, et al., 2020; Xu et al., 2016; Yokotani & Kurosawa, 2015), all reliability estimates for DCI-Urdu appeared to be high except few inconsistencies; specifically, stress communication by self (α_{women} = .41), problem-focused supportive DC by self (α_{men} = .50 and α_{women} = .43), and delegated DC by self (α_{women} = .53). These results may be attributed to cultural variations in Pakistan, which is a patriarchal society where women may perceive their partners as less likely to communicate stress experiences with them,

show practical advice or support, and take over the responsibilities in the time of stress (Qadir et al., 2013). Factor structure of the DCI was consistent with the that reported by previous validation studies of the DCI (Bodenmann, 2008; Falconier et al., 2013; Ledermann et al., 2010; Randall et al., 2016; Rusu et al., 2016; Vedes et al., 2013).

Following the factor structure of the DCI-Urdu, construct validity was examined by comparing the DCI-Urdu with relationship satisfaction (Shahid, 2014) and individual coping strategies (Akhtar, 2005). The significant correlation between DCI-Urdu and RAS indicated a positive association between both variables, which is in line with previous validation studies of DCI (e.g., Bodenmann, Pihet, & Kayser, 2006; Bodenmann & Randall, 2012; Falconier et al., 2013; Ledermann et al., 2010; Levesque, Lafontaine, Caron, & Fitzpatrick, 2014). Result from this study suggest that the DCI shows high predictive power validity for relationship satisfaction for those in Pakistan, contrarily, weak and non-significant correlations between DCI-Urdu and subscales of Brief COPE (Akhtar, 2005) revealed expected differences between individual and dyadic coping as reported previously, illustrating that also in Pakistan culture both coping strategies differ from each other (Bodenmann, 2005; Herzberg, 2013; Papp & Witt, 2010).

Lastly, results from the tests of measurement invariance demonstrated that the scalar and configural invariant models fit to the data equally well. These results were consistent with the measurement invariance evidence established in U.S. and Swiss samples as reported by Randall et al. (2016).

Limitations and Future Directions

Data from this study were cross-sectional, which limits the test-retest reliability and predictive validity of the DCI-Urdu. For this purpose, future research should include longitudinal data so that changes in partners' use of DC strategies across various time points may be investigated. Additionally, as independent data from married partners were collected. Future research may include dyadic data so that the interdependence of couples' DC strategies can be analyzed (see Iida, Seidman, & Shrout, 2018). Further, gender role could be an important stressor within couples' relationship in Pakistan that needs to be considered as interpersonal researchers in Pakistan reported strong association between gender role orientation and martial conflict (Sarwar & Aftab, 2011).

Future research utilizing the DCI-Urdu is encouraged to take cultural consideration into account. In particular, it would be helpful to include demographically diverse samples from Pakistani culture or foreign cultures in order to enhance the external validity of the study. The socioeconomic status of the couples, the couple's educational levels, and the marriage type (couples married through arranged marriages within the same caste or different caste, couples married through love marriages, and couples married through exchange marriage system) could be relevant demographic variables that should be investigated in the future research. For example, a study in Pakistan reported that marriages arranged by parents without consent of children lack love and such couples are more likely to engage in problem-focused DC compared to the emotion-focused DC (Iqbal & Safdar, 2014).

Conclusions and Implications

The current study demonstrates that DCI-Urdu is a valid and reliable 33-items self-report measure for assessing stress communication and dyadic coping behaviors for Pakistani married adults. This study opens a new horizon for relationships researchers and family counselors to address stress and coping in Pakistan. The

DCI-Urdu has the potential to help family counselors understand the dyadic nature of stress and coping strategies in Pakistan. This study would direct the clinicians and counselors to devise STM based interventions or to adapt Couples Coping Enhancement Training (CCET) program to prevent couples from marital distress and to promote coping skills to overcome dyadic stress (Bodenmann & Shantinath, 2004).

Funding

The authors have no funding to report.

Competing Interests

The authors have declared that no competing interests exist.

Acknowledgments

The authors would like to thank the participants for participating in this study.

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